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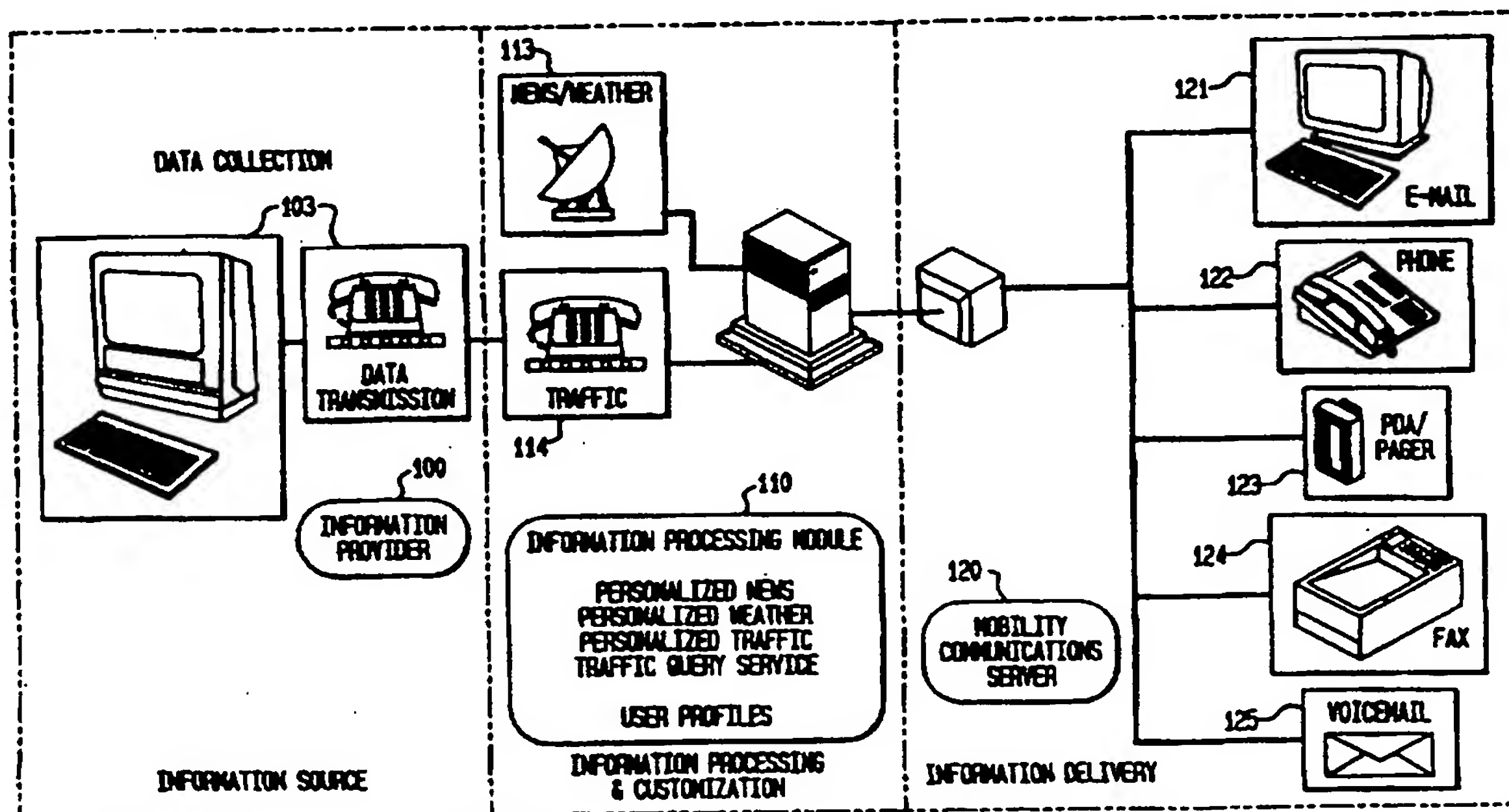
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(54) Title: METHOD AND SYSTEM FOR PROVIDING CONTINUALLY UPDATED PERSONALIZED INFORMATION



(57) Abstract

A method and system for providing continuously-updated and personalized information in a timely and convenient fashion. Through a computer-based graphical user interface a subscriber enters a set of parameters (110) defining his or her request for information, including areas of interest, monitoring periods, and communications channels by which information is to be received. Real-time machine data received from an outside information source (100) is screened in reference to the subscriber's specified parameters (110). Information matches are delivered (120) to the subscriber over a plurality of communications channels (121-125) selected by the subscriber.

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**METHOD AND SYSTEM FOR PROVIDING CONTINUALLY UPDATED
PERSONALIZED INFORMATION**

BACKGROUND OF THE INVENTION

5 The present invention relates generally to information systems and more particularly to an information system which delivers continuously-updated and personalized information in a timely and convenient fashion.

 Conventional systems capable of providing information
10 directed to a user's specific interests can prove somewhat inflexible and inconvenient for certain applications. Some "on-line" systems (such as PRODIGY and LEXIS-NEXIS) require users to sign on and conduct an interactive session with the system each time information is desired. Thus, a user
15 wishing to receive the latest information from a certain area of interest must repeatedly log on to the system and renew an active query for information. This can be impractical for users who require frequent information updates or who cannot conveniently access such systems.
20 Moreover, the channels or communications media by which requested information is delivered is usually restricted to fixed-location nodes, such as a computer terminal connected to the system or an attached printer.

 Even so-called "automatic updating services," such as
25 the Eclipse service of the LEXIS-NEXIS system, cannot provide all the versatility and flexibility which many users require. The Eclipse service delivers updated information only at the end of a user-specified period (e.g., on a daily, weekly, or monthly basis). It cannot
30 send an immediate or "real-time" alert to the user when a significant change has taken place in the user's area of interest. Thus, the Eclipse user must wait until the monitoring period has elapsed before he or she can learn of any changes that may have occurred in his or her area of

interest. Moreover, with this system, the user can only receive information via a fixed-location terminal or printer.

U.S. Patent No. 5,131,020 to Liebesny et al. and
5 U.S. Patent No. 4,812,843 to Champion, III et al. disclose information systems capable of providing updated information to a user regarding the current status of traffic conditions in a specific geographic area of interest. Although these systems can send real-time
10 updates when significant changes or developments occur within an area of interest, they each have several limitations that restrict their usefulness.

The Liebesny system provides an optional call-back feature which permits a user to select via telephone keypad
15 a predetermined window of time during which he or she may receive updates. After receiving an initial report from the system, the user may direct the system to call the user back if a significant change occurs within the predetermined time window after the initial report.
20 However, the Liebesny call-back feature is only operative for the limited time period specified by the user. Because the system cannot continuously monitor an area for updates, a user must reselect the call-back option and specify a new time window each time he or she wishes to receive an
25 update.

The system in Champion, III automatically initiates call-back information when any significant changes or conditions develop in a specified area. However, such call-backs are only made to users whom the system has
30 determined are still within the affected area. The system monitors a theoretical travel time of a vehicle travelling through the affected area and screens out those users who should have passed out of the area since the last time they were called. Thus, the system of Champion, III does not

permit the user to control the time window for receiving updates. Moreover, because the system does not continuously monitor the area of interest, a user must renew his or her request for an update each time such an
5 update is desired.

SUMMARY OF THE INVENTION

The present invention is directed to a method and system for providing continuously-updated and personalized information in a timely and convenient fashion.

10 Specifically, a desired advantage of the present invention is to provide a flexible and versatile information system which affords a subscriber control over the parameters of his or her information request, including the area of interest to be monitored, the period of time to be
15 monitored, and the communications media by which the subscriber prefers the information to be sent.

To achieve these and other advantages in accordance with the purpose of the present invention, as embodied and broadly described herein, the invention includes a method
20 of providing continuously-updated, personalized information responsive to parameters defining a subscriber's request for information, comprising the steps, executed by a data processor, of receiving the parameters from the subscriber through a computer-based graphical user interface and
25 storing said parameters in a database. The method further comprises the steps of receiving real-time information from an outside information source, comparing the information with the parameters specified by the subscriber, and detecting information matches. Finally,
30 the method includes the step of delivering information matches to the subscriber.

In another aspect, the invention includes an information system for providing continuously-updated personalized information to a subscriber according to

parameters defining a subscriber's request for information, comprising profile manager means for receiving the parameters of the subscriber's information request through a computer-based graphical user interface, processor means
5 for receiving real-time information from an outside information source, and comparing means for detecting matches between the information with the parameters specified by the subscriber. The information system further comprises dissemination means for receiving
10 real-time information matching the subscriber's parameters and delivering said information matches to the subscriber over a plurality of communications channels.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in
15 and constitute a part of this specification, illustrate several embodiments of the invention and together with the description serve to explain the principles of the invention. In the drawings,

Fig. 1 is a block diagram showing a general
20 organizational scheme for the implementation of an embodiment of the present invention;

Fig. 2 is a schematic diagram depicting the primary system components of an embodiment of the present invention;

25 Fig. 3 is a schematic diagram showing the basic architecture of a personalized information delivery system according to the present invention.

Fig. 4 is an example of a main menu screen for
30 accessing the service profiles used in accordance with an embodiment of the present invention;

Fig. 5 is an example of a menu screen for a personal information profile allowing a subscriber to specify destination addresses on various communications channels in accordance with an embodiment of the present invention;

Fig. 6 is an example of a menu screen for a profile, which, according to an embodiment of the present invention, allows the subscriber to specify travel routes and times to be monitored in accordance with an embodiment of the present invention;

Fig. 7 is an example of a menu screen for a communication profile allowing the subscriber to choose the communications channel(s) by which information is to be delivered in accordance an embodiment of the present invention; and

Fig. 8 is an example of a menu screen for a notification profile allowing the subscriber to specify the communications channel by which the subscriber can be notified that an information delivery has been made in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

Referring to Fig. 1 of the drawings, a preferred embodiment of a system for delivering continuously-updated, personalized information according to the present invention includes an information provider 100 for supplying real-time machine-readable information, an information processing module 110 for information processing and customization, and a mobility communications server 120 for information delivery. These components are the principal system elements and may be implemented several different ways.

Preferably, as shown in Fig. 1, real-time information (e.g., news/weather and traffic data) entered into a

terminal 103 or other information entry system is sent in machine-readable format from an outside information source to information processing module 110 via a leased line, network, or some other interconnection method

5 (113 and 114). An outside information source can be, for example, a commercial supplier of real-time information used by commercial radio and TV stations. Information processing module 110 catalogs the information and generates an update alert when it detects information that
10 has been specified by a subscriber as being of particular interest.

Mobility communications server 120 receives the update alert from information processing module 110 and disseminates the update alert to the subscriber over
15 communications channels selected by the subscriber. These channels include any communication system or communication medium that can be interfaced to information processing system 110, such as electronic mail 121, telephone 122, PDA/pager 123, fax 124, and/or voice mail 125.

20 Fig. 2 shows a more detailed schematic representation of the embodiment of the invention depicted in Fig. 1. Alert server 210 includes a profile manager GUI 212 having data connectivity to a processing module 214 corresponding to information processing module 110 shown in Fig. 1.
25 Profile manager GUI 212 receives the subscriber's "profile" information defining his or her information request via a terminal or other information entry system connected with processing module 110. Profile information includes various postal, electronic, and telephonic "addresses" by
30 which the subscriber can be reached; the subscriber's area, discipline, subject, or item of interest; the time periods to be monitored; and preferred communications channels for delivery of information for different times of the day.

Processing module 214 catalogs real-time machine-readable data received from an outside information source via a data feed 220, which can be a leased line or network, connecting processing module 214 to information provider 100 shown in Fig. 1. Processing module 214 compares the real-time data with the subscriber's profile information obtained from profile manager 212. When processing module 214 detects a match between the real-time information and the subscriber's profile information, alert server 210 sends update alerts to the subscriber via mobility server 230, corresponding to server 120 in Fig. 1. Mobility server 230 may include several individual servers such as a general server 240 for e-mail, paging, and facsimiles, and a telephone server 250.

Figure 3 shows the components of Fig. 2 in even greater detail. Processing module 214 uses a general purpose database 310 containing information from data feed 220. A parser 320 accepts data input from the outside information source and indexes such data before storing the data in database 310. Additionally, a user profile manager 330 accepts profile information from the profile manager GUI 212 for storage in database 310. The profile information serves as a "filter template" to screen data for items that the subscriber has indicated is of particular interest.

Alert scheduler 340 searches for and detects matches between the outside information and the profile information stored in database 310. When an information-profile match is detected, alert scheduler 340 triggers delivery of the information by sending a dissemination message to mobility server 230. Mobility server 230 contains a dissemination module 370 containing individual servers for several different delivery channels. These servers interface with their respective communication networks (e.g., the Internet

or Public Switched Telephone Network) so that delivery of the information can be made on the assigned delivery channel. Those servers include pager server 371, e-mail server 372, fax server 373, phone and voice mail server 374, and FM subcarrier broadcast server 375.

In addition, as discussed in greater detail infra, alert server 210 supports an interactive querying feature 380 which permits a subscriber to receive immediate feedback regarding an item of interest specified on his or her interest profile. Referring to Figs. 2 and 3, processing module 214 carries out the interactive querying feature 380 of the present invention. Processing module 214 includes an interactive query manager 350 which responds to the subscriber's request for an immediate information query by overriding the time of delivery specified in the service profile.

Preferably, all of the modules, servers, managers, and other elements of Figs. 1-3 reside in software implemented on a general purpose computer. Their respective functions can also be distributed for execution in different processors or by special purpose hardware.

Having described in detail the operation of alert server 210 and mobility server 230, the preferred implementation of the interaction between the subscriber and the profile manager 212 can now be explained. A subscriber enters his or her profile parameters via a GUI 212. GUI 212 presents menu screens which allow the subscriber to specify the items of interest to the subscriber and how information relating to those items should be delivered. Entry of profile information can be made through a variety of different entry means, including computer keyboard, mouse click and pop-up menus which prompt the subscriber, audio communication, facsimile, or touch screen.

A subscriber can also enter profile information several ways depending on where and how the profile manager GUI 212 is installed. For example, profile manager GUI 212 can be installed in a central service center. In that configuration, a subscriber could contact the service center by telephone or fax to have his or her profile information entered by an operator. Where profile manager GUI 212 is installed in a subscriber's personal computer or PDA having data connectivity with the alert server 210, the subscriber could reasonably enter the profile information.

Alternatively, profile manager GUI 212 could be installed in a walk-up kiosk, allowing subscribers to enter directly their profile information at such a publicly accessible location.

The preferred embodiment of the present invention uses three service profiles: a personal information profile, an interest profile, and a communications profile. A personal information profile specifies the destination addresses of a subscriber on various communications channels. An interest profile specifies the items of interest as well as time periods that the subscriber wishes to be monitored. A communication profile delivers information to subscribers based on their preference for receiving such information.

Preferably, the first screen the subscriber encounters is the main menu screen. Figure 4 shows an example of a main menu screen through which the subscriber may modify various components of his or her service profile. The menu contains simple instructions on the proper order of entering profile information and allows the subscriber to access the other profile screens. According to the screen shown in Fig. 4, the subscriber, using a mouse, points to and clicks the appropriate item on the menu bar (e.g., Personal Data, Travel Profile, Communication Profile, Quit, and Read Me). For each profile, the

subscriber completes his entry of information and clicks "DONE." The subscriber is then returned to the main menu screen to allow the subscriber to make further entries or to quit.

5 Figure 5 shows a preferred menu screen for entry of the subscriber's personal information profile. Through this screen, users identify their names, home and work postal addresses, pager company, pager ID, fax telephone number, home telephone number, work telephone number,
10 cellular phone number, e-mail address, radio mail address, and voice mail number.

 Figure 6 shows a menu screen for an interest profile according to an embodiment of the present invention directed to traffic information. This "travel profile"
15 menu screen permits the subscriber to enter up to ten different travel itineraries specifying the roads, bridges, tunnels, or other items on a particular route; the time period or "commute window" during which the specified route is monitored for updates; and the specific day or days to
20 be monitored. For example, under entry no. 1, the subscriber has requested the alert server to monitor traffic along the New Jersey Turnpike, the George Washington Bridge, the Holland Tunnel and Routes 24 and I-78 during the time period from 4:00 PM to 6:30 PM on
25 November 22, 1994.

 The subscriber can also request in advance that a particular route be automatically monitored on certain days of the week. As indicated under entry no. 2, the
30 subscriber has requested that the traffic along the Belt Parkway, the Bayonne Bridge, the Brooklyn Battery Tunnel, and Flatbush Avenue be monitored between 7:00 AM and 9:00 AM on Sunday, Tuesday, and Friday (indicated by a corresponding 1, 3, and 6, respectively). The system will automatically renew that query every Sunday, Tuesday, and

Friday of each week until the subscriber deactivates it. This feature thus negates the inconvenience of having to repeatedly enter the same queries for regularly travelled routes, such as work commutes.

5 Each query item has a corresponding menu push-button box marked "ok" which permits interactive querying. Activating this button, e.g., via mouse click, causes the GUI to immediately submit a one-time query requesting information about the route specified in that entry. The
10 entry, however, is not changed by invoking an interactive query from the GUI. The interactive query feature allows the subscriber to use a stored interest profile entry to generate a quick query for that entry. Interactive querying is also possible via a text-only interface. For
15 example, a subscriber may submit a query in the form of a simple command-line instruction which can run on any platform having e-mail access to the alert server.

As indicated by the menu screen for generating the communication profile (Fig. 7), the subscriber can select
20 among several delivery channels (e.g., pager, facsimile, voice mail, electronic mail, radio mail, home phone, work phone, cellular phone, or video), and different time intervals of the day. Thus, for example, a subscriber could direct that between 7:00 AM and 7:30 AM, the
25 information be sent via home telephone, and between 4:45 PM and 5:00 PM, information be sent to an appropriate voice mail box.

The subscriber may also request that multiple copies of the information be delivered on multiple channels
30 simultaneously. For example, from 7:30 AM to 8:00 AM, the subscriber could direct that information be sent to both a pager and by electronic mail. Further, the communication profile provides a default entry in which the subscriber

can specify a delivery channel to which information will be sent if not otherwise specified.

The delivery of information alerts can depart from the time periods and communications channels specified in the subscriber's communications profile if the subscriber is known to be on the system when an information alert occurs.

Thus, rather than send the information alert only as specified in the communications profile, the system sends the information directly to the subscriber at his on-line location. Specifically, when the subscriber accesses the system through a communications device, the device transmits dynamic registration information notifying the system of its identity and active status. Accordingly, if an information alert occurs and the subscriber is known to be on the system by virtue of dynamic registration information sent by an active communications channel, the information alert will be delivered to the subscriber via that active channel, even if that channel has not been specified in the communications profile for delivery of information at that time.

A typical information alert sent to a subscriber's pager could contain the following information:

Report Time : 1715

Summary: Accident-Traffic Jam

Detail: IN MORRIS COUNTY; NORTHBOUND ROUTE 287 IS JAMMED FOR OVER EIGHT (8) MILES INTO SOUTH STREET (MORRISTOWN), WHERE THE RIGHT LANE REMAINS CLOSED DUE TO A TRACTOR TRAILER ACCIDENT. NORTHBOUND ROUTE 202 IS PICKING UP LOTS OF ALTERNATE VOLUME BETWEEN BASKING RIDGE AND MORRISTOWN.

Because some information alerts can be lengthy, e.g., news stories or financial reports, the present invention allows the subscriber to specify that he or she should be

notified when an item matching the subscriber's profile information has been detected. This affords the subscriber the added convenience of controlling when he or she chooses to read the information alert.

5 Figure 8 shows an example of a notification menu which permits the subscriber to select the preferred communication medium or media by which notification of an information alert should be sent. For example, the subscriber has specified that he or she should be notified
10 of any information alerts occurring during the time period 6:30 AM to 7:30 AM by home telephone. From 7:30 AM to 9:00 AM, in comparison, the subscriber has directed that notification be received by pager and by cellular telephone.

15 Thus, if an information alert occurs during the time period 6:30 AM to 7:30 AM, the information alert would be delivered to the subscriber according to the communications channel specified by the user for that period. In addition, because the subscriber has elected to received
20 notification of information alerts during that period, the subscriber would receive a notification message stating, for example, "A news item about IBM has just been sent to your electronic mailbox." The subscriber could then decide to retrieve the information immediately, or at a later,
25 more convenient time.

Therefore, as described herein, the present invention discloses a personal information delivery system capable of automatic and continuous monitoring and updating. According to a preferred embodiment of the present
30 invention, a subscriber can request information about road conditions and vehicle traffic similar to the type of information obtained from commercial radio station broadcasts. However, unlike radio traffic updates, the present invention offers personalized information tailored

to the specific interest of the subscriber (e.g. condition of roads, bridges, or tunnels on the subscriber's particular route), at a specific time needed by the subscriber (e.g., during his or her commute time), and
5 delivered via a communications medium preferred by the subscriber (e.g., car phone, fax, pager).

The applications of the present invention are potentially diverse. The invention can deliver personalized, real-time information concerning a variety of
10 different areas of interest, including sports, weather, financial markets, news, and specialty interest information. This invention could also be used in targeted advertising.

Other embodiments of the present invention will be
15 apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. For example, this invention is modularly expandable to accommodate new communications technologies not yet available on the existing communications
20 infrastructure. In addition, the profile menus allowing entry of profile information by the subscriber can also be presented to the subscriber in audio format. Thus, it is intended that the specification and examples be considered as exemplary only, with a true scope of the invention being
25 indicated by the following claims.

WHAT IS CLAIMED IS:

1. A method of providing continuously-updated, personalized information responsive to parameters defining a subscriber's request for information comprising the steps, executed by a data processor, of:
- 5 receiving said parameters from the subscriber through a computer-based graphical user interface; storing said parameters in a database; receiving real-time information from an outside
- 10 information source; comparing said information with said parameters and detecting information matches; and delivering said information matches to the subscriber.
- 15 2. The method of claim 1 further comprising the step of notifying the subscriber that an information match has been delivered to the subscriber.
3. The method of claim 1 wherein the step of receiving said parameters includes the steps of
- 20 receiving destination addresses of the subscriber; receiving specified items of interest to the subscriber and time periods for generating information matches; and
- 25 receiving specified communications channels through which said information matches should be delivered to the subscriber at various times throughout the day.
4. The method of claim 1 wherein the step of receiving said parameters includes the step of receiving
- 30 through a computer keyboard, mouse, audio communication, facsimile, or touch screen.
5. The method of claim 1 wherein the step of delivering said information matches includes the step of

transmitting the information matches over one or more communications channels specified by the subscriber.

6. The method of claim 1 wherein the step of receiving said parameters includes the step of receiving an
5 identification of one or more communications channels, and wherein the step of delivering said information matches includes the step of transmitting the information over all identified communications channels at the same time.

10 7. The method of claim 1 further including the steps of

receiving dynamic registration information from an on-line communications channel of the subscriber,

15 identifying said on-line communications channel, and delivering the information matches to said on-line communications channel.

8. The method of claim 1 wherein said steps of receiving real-time information from an outside source, comparing said information with the subscriber's
20 parameters, detecting information matches, and delivering said information matches to the subscriber, are continuously and automatically performed.

9. The method of claim 2 wherein said step of notifying includes the steps of

25 receiving specified time periods for notifying the subscriber, and

receiving specified communications channels by which the subscriber is to be notified during said specified time periods.

30 10. The method of claim 3 further including the step of overriding the times for generating and delivering information matches specified by the subscriber in response to a command for an immediate query such that an

information match is immediately sent to the subscriber at his or her on-line location.

11. An information system for providing continuously updated personalized information to a subscriber according to parameters defining a subscriber's request for information, said system comprising:

profile manager means for receiving the parameters of the subscriber's information request through a computer-based graphical user interface;

10 processor means for receiving real-time information from an outside information source, and

comparing means for detecting matches between said information with said parameters; and

15 dissemination means for receiving real-time information matching said parameters and delivering said information matches to the subscriber over a plurality of communications channels.

12. The information system of claim 11, further comprising a notification means for generating notification messages to the subscriber over one or more communications channels.

13. The information system of claim 11, wherein said system further includes a database for storing said parameters.

25 14. The information system of claim 11, wherein said profile manager means for receiving the parameters includes a computer keyboard, mouse, audio communication, facsimile, or touch screen.

30 15. The information system of claim 11, wherein said dissemination means includes means for converting matching information into the proper format for transmission over the communications media specified by the subscriber.

FIG. 1

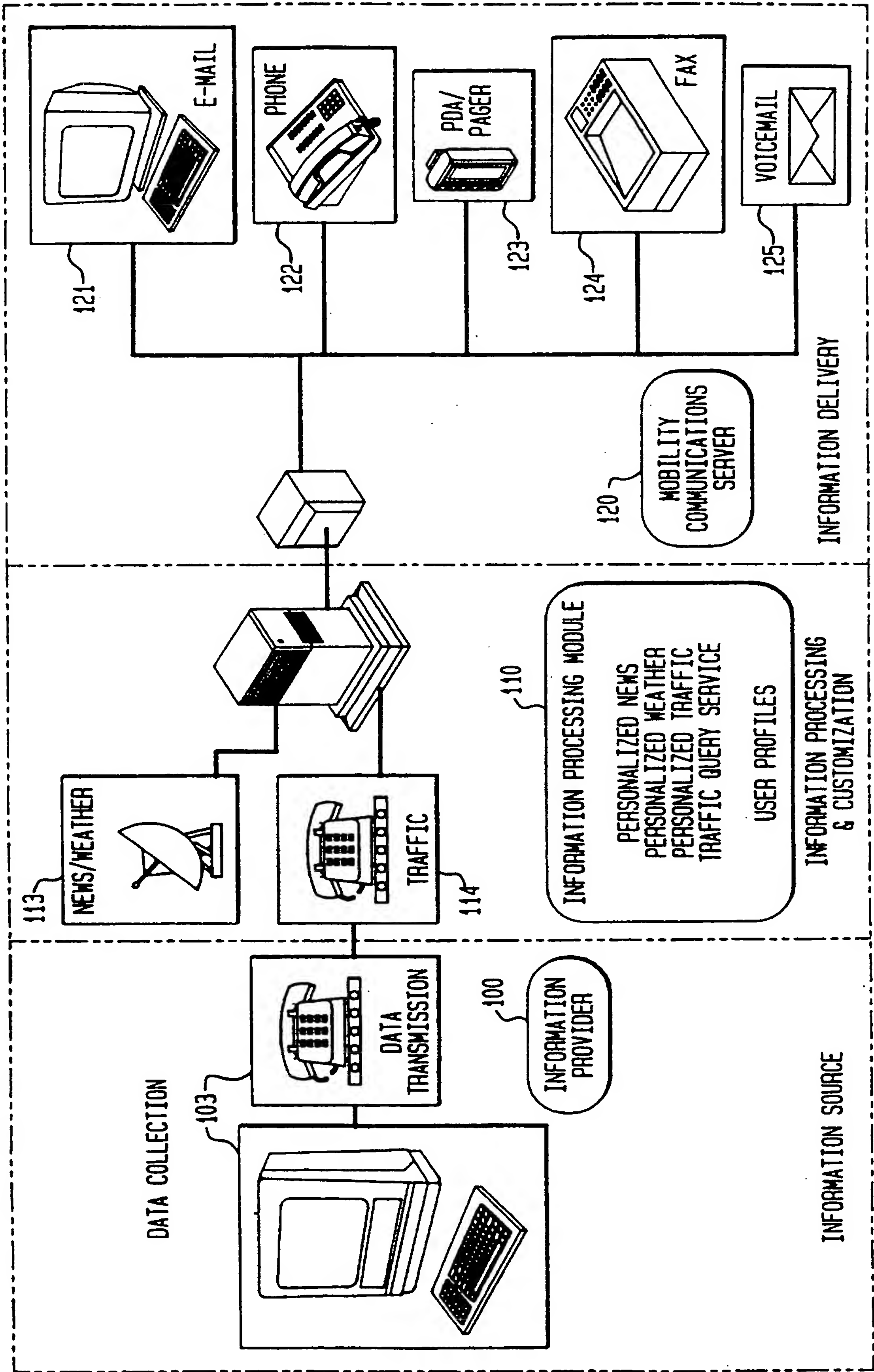







FIG. 4

MAIN MENU

| | | | | |
|---|----------------|-----------------------|------|--------|
| <div>  - INTERFACE  </div> | | | | |
| PERSONAL DATA | TRAVEL PROFILE | COMMUNICATION PROFILE | QUIT | README |
| <p>DEVELOPED BY: AMANDA VIRAMI, MICHAEL KRAMER AND RAVI JAIN. COPYRIGHT (c) BELLCORE 1993</p> <p>THIS PROGRAM WILL HELP YOU FILL IN YOUR PERSONAL, TRAVEL AND COMMUNICATION PROFILES IN A USER-FRIENDLY MANNER. HELP IS AVAILABLE WITHIN EACH MENU OPTION. JUST FOLLOW THESE SIMPLE STEPS:</p> <ol style="list-style-type: none"> 1. ENTER INFORMATION ABOUT YOURSELF USING THE PERSONAL DATA MENU. 2. ENTER YOUR ITINERARIES USING THE TRAVEL PROFILE MENU. 3. ENTER HOW YOU SHOULD BE INFORMED USING THE COMMUNICATION PROFILE MENU. | | | | |

SAMPLE PERSONAL PROFILE MENU

FIG. 5

| | |
|--|--|
| <div>  SIMPLE PERSONAL INFO  </div> | |
| SUBSCRIBER ENTRY FORM: | |
| NAME: | LAST: <u>ADAMS</u> FIRST: <u>SAM</u> |
| ADDRESS (HOME): | <u>10 DOWNING STREET, APT. 3B</u> |
| | CITY: <u>BOWD CITY</u> ST.: <u>NJ</u> ZIP: <u>00802</u> |
| ADDRESS (WORK): | <u>MRE 2N262 BELLCORE, 445 SOUTH STREET</u> |
| | CITY: <u>MORRISTOWN</u> ST.: <u>NJ</u> ZIP: <u>07962</u> |
| PAGER COMPANY: | <u>METROMEDIA</u> |
| PAGER ID: | <u>68813</u> |
| FAN AREA CODE & NUMBER: | <u>12819270989</u> |
| HOME AREA CODE & PHONE: | <u>19002486814</u> |
| WORK AREA CODE & PHONE: | <u>12818294183</u> |
| ONLINE AREA CODE & PHONE: | <u>19001234567</u> |
| EMAIL: | <u>ENVIRONMENT@THUMPER.BELLCORE.COM</u> |
| RADIO MAIL: | <u>SOMEBODY@RADIO-MAIL.COM</u> |
| VOICE MAIL: | MATRX <u>12818295555</u> EXTRX <u>0000</u> |
| <div>  </div> | |

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FIG. 6

SAMPLE TRAVEL PROFILE

| <input checked="" type="checkbox"/> TRAVEL PROFILE <input type="checkbox"/> | | | |
|---|--------------------|---------|---|
| IMMED. QUERY | DATE (DD-MM-YY) | DAYS | ITINERARY |
| 1. <input checked="" type="checkbox"/> | 22-NOV-94 | | 06:00-NEW JERSEY TURNPIKE-GEORGE WASHINGTON BRIDGE-HOLLAND TUNNEL-NJ_24-NJ I_78-[18:30] |
| 2. <input checked="" type="checkbox"/> | | 1, 3, 8 | 07:00-BELT PARKWAY-BAYONNE BRIDGE-BROOKLYN BATTERY TUNNEL-FLATBUSH AVENUE-[08:00] |
| 3. <input checked="" type="checkbox"/> | | | |
| 4. <input checked="" type="checkbox"/> | | | |
| 5. <input checked="" type="checkbox"/> | | | |
| 6. <input checked="" type="checkbox"/> | | | |
| 7. <input checked="" type="checkbox"/> | | | |
| 8. <input checked="" type="checkbox"/> | | | |
| 9. <input checked="" type="checkbox"/> | | | |
| 10 <input checked="" type="checkbox"/> | | | |
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px;">CANCEL</div> <div style="border: 1px solid black; padding: 2px 10px;">DONE</div> </div> | | | |

5/5

FIG. 7

SAMPLE COMMUNICATION PROFILE

| TIME | | MODALITIES: | | | | | | | |
|---------|-----------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| FROM: | TO: | PAGE | FAX | VMAIL | EMAIL | RMAIL | HPHONE | WPHONE | CPHONE |
| 07: 00 | 07: 30 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 07: 30 | 08: 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16: 45 | 17: 00... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| DEFAULT | ENTRY: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

FIG. 8

| TIME | | NOTIFICATION MODALITIES: | | | | |
|-------|-------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| FROM: | TO: | PAGE | VMAIL | HPHONE | WPHONE | CPHONE |
| 6: 30 | 7: 30 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7: 30 | 9: 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4: 00 | 5: 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5: 00 | 7: 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/13797

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : Please See Extra Sheet.

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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|-----------|--|-----------------------|
| A,E | US 5,576,951 A (LOCKWOOD) 19 November 1996, see whole document. | 1-15 |
| X,P | US 5,513,126 A (HARKINS et al) 30 April 1996, see whole document. | 3,5-7,9,10 |
| X | US 5,428,778 A (BROOKES) 27 June 1995, see whole document. | 1,2,4,8,11-15 |
| X | US 5,404,505 A (LEVINSON) 04 April 1995, see whole document. | 1-15 |
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| A | US 4,740,912 A (WHITAKER) 26 April 1988, see whole document. | 1-15 |
| A | US 4,429,385 A (CICHELLI et al) 31 January 1984, see whole document. | 1-15 |

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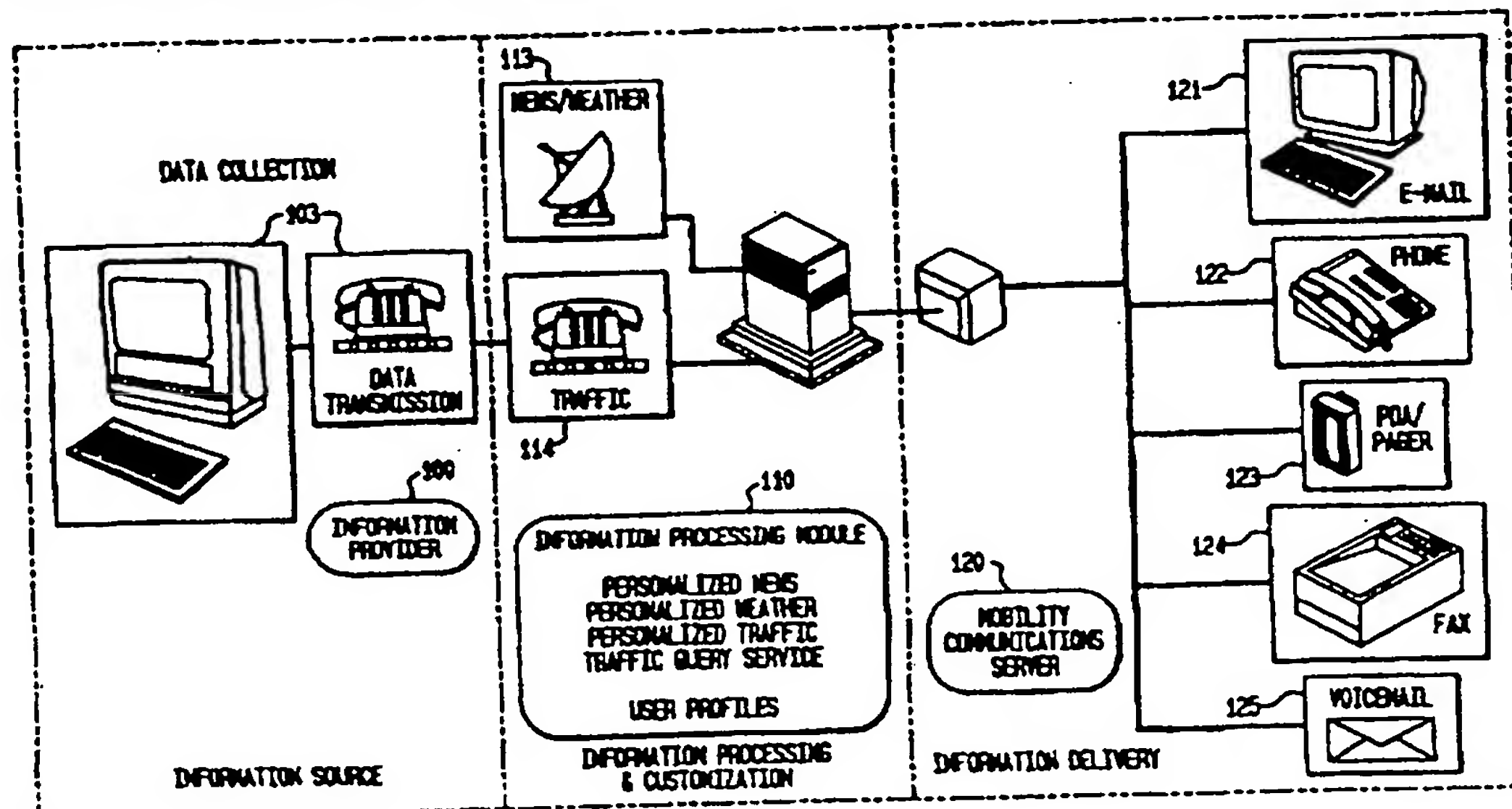
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(57) Abstract

A method and system for providing continuously-updated and personalized information in a timely and convenient fashion. Through a computer-based graphical user interface a subscriber enters a set of parameters (110) defining his or her request for information, including areas of interest, monitoring periods, and communications channels by which information is to be received. Real-time machine data received from an outside information source (100) is screened in reference to the subscriber's specified parameters (110). Information matches are delivered (120) to the subscriber over a plurality of communications channels (121-125) selected by the subscriber.

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**METHOD AND SYSTEM FOR PROVIDING CONTINUALLY UPDATED
PERSONALIZED INFORMATION**

BACKGROUND OF THE INVENTION

5 The present invention relates generally to information systems and more particularly to an information system which delivers continuously-updated and personalized information in a timely and convenient fashion.

10 Conventional systems capable of providing information directed to a user's specific interests can prove somewhat inflexible and inconvenient for certain applications. Some "on-line" systems (such as PRODIGY and LEXIS-NEXIS) require users to sign on and conduct an interactive session with the system each time information is desired. Thus, a user
15 wishing to receive the latest information from a certain area of interest must repeatedly log on to the system and renew an active query for information. This can be impractical for users who require frequent information updates or who cannot conveniently access such systems.
20 Moreover, the channels or communications media by which requested information is delivered is usually restricted to fixed-location nodes, such as a computer terminal connected to the system or an attached printer.

25 Even so-called "automatic updating services," such as the Eclipse service of the LEXIS-NEXIS system, cannot provide all the versatility and flexibility which many users require. The Eclipse service delivers updated information only at the end of a user-specified period (e.g., on a daily, weekly, or monthly basis). It cannot
30 send an immediate or "real-time" alert to the user when a significant change has taken place in the user's area of interest. Thus, the Eclipse user must wait until the monitoring period has elapsed before he or she can learn of any changes that may have occurred in his or her area of

interest. Moreover, with this system, the user can only receive information via a fixed-location terminal or printer.

U.S. Patent No. 5,131,020 to Liebesny et al. and
5 U.S. Patent No. 4,812,843 to Champion, III et al. disclose information systems capable of providing updated information to a user regarding the current status of traffic conditions in a specific geographic area of interest. Although these systems can send real-time
10 updates when significant changes or developments occur within an area of interest, they each have several limitations that restrict their usefulness.

The Liebesny system provides an optional call-back feature which permits a user to select via telephone keypad
15 a predetermined window of time during which he or she may receive updates. After receiving an initial report from the system, the user may direct the system to call the user back if a significant change occurs within the predetermined time window after the initial report.
20 However, the Liebesny call-back feature is only operative for the limited time period specified by the user. Because the system cannot continuously monitor an area for updates, a user must reselect the call-back option and specify a new time window each time he or she wishes to receive an
25 update.

The system in Champion, III automatically initiates call-back information when any significant changes or conditions develop in a specified area. However, such call-backs are only made to users whom the system has
30 determined are still within the affected area. The system monitors a theoretical travel time of a vehicle travelling through the affected area and screens out those users who should have passed out of the area since the last time they were called. Thus, the system of Champion, III does not

permit the user to control the time window for receiving updates. Moreover, because the system does not continuously monitor the area of interest, a user must renew his or her request for an update each time such an
5 update is desired.

SUMMARY OF THE INVENTION

The present invention is directed to a method and system for providing continuously-updated and personalized information in a timely and convenient fashion.
10 Specifically, a desired advantage of the present invention is to provide a flexible and versatile information system which affords a subscriber control over the parameters of his or her information request, including the area of interest to be monitored, the period of time to be
15 monitored, and the communications media by which the subscriber prefers the information to be sent.

To achieve these and other advantages in accordance with the purpose of the present invention, as embodied and broadly described herein, the invention includes a method
20 of providing continuously-updated, personalized information responsive to parameters defining a subscriber's request for information, comprising the steps, executed by a data processor, of receiving the parameters from the subscriber through a computer-based graphical user interface and
25 storing said parameters in a database. The method further comprises the steps of receiving real-time information from an outside information source, comparing the information with the parameters specified by the subscriber, and detecting information matches. Finally,
30 the method includes the step of delivering information matches to the subscriber.

In another aspect, the invention includes an information system for providing continuously-updated personalized information to a subscriber according to

parameters defining a subscriber's request for information, comprising profile manager means for receiving the parameters of the subscriber's information request through a computer-based graphical user interface, processor means
5 for receiving real-time information from an outside information source, and comparing means for detecting matches between the information with the parameters specified by the subscriber. The information system further comprises dissemination means for receiving
10 real-time information matching the subscriber's parameters and delivering said information matches to the subscriber over a plurality of communications channels.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in
15 and constitute a part of this specification, illustrate several embodiments of the invention and together with the description serve to explain the principles of the invention. In the drawings,

Fig. 1 is a block diagram showing a general
20 organizational scheme for the implementation of an embodiment of the present invention;

Fig. 2 is a schematic diagram depicting the primary system components of an embodiment of the present invention;

25 Fig. 3 is a schematic diagram showing the basic architecture of a personalized information delivery system according to the present invention.

Fig. 4 is an example of a main menu screen for accessing the service profiles used in accordance with an
30 embodiment of the present invention;

Fig. 5 is an example of a menu screen for a personal information profile allowing a subscriber to specify destination addresses on various communications channels in accordance with an embodiment of the present invention;

Fig. 6 is an example of a menu screen for a profile, which, according to an embodiment of the present invention, allows the subscriber to specify travel routes and times to be monitored in accordance with an embodiment of the present invention;

Fig. 7 is an example of a menu screen for a communication profile allowing the subscriber to choose the communications channel(s) by which information is to be delivered in accordance an embodiment of the present invention; and

Fig. 8 is an example of a menu screen for a notification profile allowing the subscriber to specify the communications channel by which the subscriber can be notified that an information delivery has been made in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

Referring to Fig. 1 of the drawings, a preferred embodiment of a system for delivering continuously-updated, personalized information according to the present invention includes an information provider 100 for supplying real-time machine-readable information, an information processing module 110 for information processing and customization, and a mobility communications server 120 for information delivery. These components are the principal system elements and may be implemented several different ways.

Preferably, as shown in Fig. 1, real-time information (e.g., news/weather and traffic data) entered into a

terminal 103 or other information entry system is sent in machine-readable format from an outside information source to information processing module 110 via a leased line, network, or some other interconnection method

5 (113 and 114). An outside information source can be, for example, a commercial supplier of real-time information used by commercial radio and TV stations. Information processing module 110 catalogs the information and generates an update alert when it detects information that
10 has been specified by a subscriber as being of particular interest.

Mobility communications server 120 receives the update alert from information processing module 110 and disseminates the update alert to the subscriber over
15 communications channels selected by the subscriber. These channels include any communication system or communication medium that can be interfaced to information processing system 110, such as electronic mail 121, telephone 122, PDA/pager 123, fax 124, and/or voice mail 125.

20 Fig. 2 shows a more detailed schematic representation of the embodiment of the invention depicted in Fig. 1. Alert server 210 includes a profile manager GUI 212 having data connectivity to a processing module 214 corresponding to information processing module 110 shown in Fig. 1.
25 Profile manager GUI 212 receives the subscriber's "profile" information defining his or her information request via a terminal or other information entry system connected with processing module 110. Profile information includes various postal, electronic, and telephonic "addresses" by
30 which the subscriber can be reached; the subscriber's area, discipline, subject, or item of interest; the time periods to be monitored; and preferred communications channels for delivery of information for different times of the day.

Processing module 214 catalogs real-time machine-readable data received from an outside information source via a data feed 220, which can be a leased line or network, connecting processing module 214 to information provider 100 shown in Fig. 1. Processing module 214 compares the real-time data with the subscriber's profile information obtained from profile manager 212. When processing module 214 detects a match between the real-time information and the subscriber's profile information, alert server 210 sends update alerts to the subscriber via mobility server 230, corresponding to server 120 in Fig. 1. Mobility server 230 may include several individual servers such as a general server 240 for e-mail, paging, and facsimiles, and a telephone server 250.

Figure 3 shows the components of Fig. 2 in even greater detail. Processing module 214 uses a general purpose database 310 containing information from data feed 220. A parser 320 accepts data input from the outside information source and indexes such data before storing the data in database 310. Additionally, a user profile manager 330 accepts profile information from the profile manager GUI 212 for storage in database 310. The profile information serves as a "filter template" to screen data for items that the subscriber has indicated is of particular interest.

Alert scheduler 340 searches for and detects matches between the outside information and the profile information stored in database 310. When an information-profile match is detected, alert scheduler 340 triggers delivery of the information by sending a dissemination message to mobility server 230. Mobility server 230 contains a dissemination module 370 containing individual servers for several different delivery channels. These servers interface with their respective communication networks (e.g., the Internet

or Public Switched Telephone Network) so that delivery of the information can be made on the assigned delivery channel. Those servers include pager server 371, e-mail server 372, fax server 373, phone and voice mail server 374, and FM subcarrier broadcast server 375.

In addition, as discussed in greater detail infra, alert server 210 supports an interactive querying feature 380 which permits a subscriber to receive immediate feedback regarding an item of interest specified on his or her interest profile. Referring to Figs. 2 and 3, processing module 214 carries out the interactive querying feature 380 of the present invention. Processing module 214 includes an interactive query manager 350 which responds to the subscriber's request for an immediate information query by overriding the time of delivery specified in the service profile.

Preferably, all of the modules, servers, managers, and other elements of Figs. 1-3 reside in software implemented on a general purpose computer. Their respective functions can also be distributed for execution in different processors or by special purpose hardware.

Having described in detail the operation of alert server 210 and mobility server 230, the preferred implementation of the interaction between the subscriber and the profile manager 212 can now be explained. A subscriber enters his or her profile parameters via a GUI 212. GUI 212 presents menu screens which allow the subscriber to specify the items of interest to the subscriber and how information relating to those items should be delivered. Entry of profile information can be made through a variety of different entry means, including computer keyboard, mouse click and pop-up menus which prompt the subscriber, audio communication, facsimile, or touch screen.

A subscriber can also enter profile information several ways depending on where and how the profile manager GUI 212 is installed. For example, profile manager GUI 212 can be installed in a central service center. In that
5 configuration, a subscriber could contact the service center by telephone or fax to have his or her profile information entered by an operator. Where profile manager GUI 212 is installed in a subscriber's personal computer or PDA having data connectivity with the alert server 210, the
10 subscriber could reasonably enter the profile information.

Alternatively, profile manager GUI 212 could be installed in a walk-up kiosk, allowing subscribers to enter directly their profile information at such a publicly accessible location.

15 The preferred embodiment of the present invention uses three service profiles: a personal information profile, an interest profile, and a communications profile. A personal information profile specifies the destination addresses of a subscriber on various communications channels. An
20 interest profile specifies the items of interest as well as time periods that the subscriber wishes to be monitored. A communication profile delivers information to subscribers based on their preference for receiving such information.

Preferably, the first screen the subscriber encounters
25 is the main menu screen. Figure 4 shows an example of a main menu screen through which the subscriber may modify various components of his or her service profile. The menu contains simple instructions on the proper order of entering profile information and allows the subscriber to
30 access the other profile screens. According to the screen shown in Fig. 4, the subscriber, using a mouse, points to and clicks the appropriate item on the menu bar (e.g., Personal Data, Travel Profile, Communication Profile, Quit, and Read Me). For each profile, the

subscriber completes his entry of information and clicks "DONE." The subscriber is then returned to the main menu screen to allow the subscriber to make further entries or to quit.

5 Figure 5 shows a preferred menu screen for entry of the subscriber's personal information profile. Through this screen, users identify their names, home and work postal addresses, pager company, pager ID, fax telephone number, home telephone number, work telephone number,
10 cellular phone number, e-mail address, radio mail address, and voice mail number.

 Figure 6 shows a menu screen for an interest profile according to an embodiment of the present invention directed to traffic information. This "travel profile"
15 menu screen permits the subscriber to enter up to ten different travel itineraries specifying the roads, bridges, tunnels, or other items on a particular route; the time period or "commute window" during which the specified route is monitored for updates; and the specific day or days to
20 be monitored. For example, under entry no. 1, the subscriber has requested the alert server to monitor traffic along the New Jersey Turnpike, the George Washington Bridge, the Holland Tunnel and Routes 24 and I-78 during the time period from 4:00 PM to 6:30 PM on
25 November 22, 1994.

 The subscriber can also request in advance that a particular route be automatically monitored on certain days of the week. As indicated under entry no. 2, the subscriber has requested that the traffic along the Belt
30 Parkway, the Bayonne Bridge, the Brooklyn Battery Tunnel, and Flatbush Avenue be monitored between 7:00 AM and 9:00 AM on Sunday, Tuesday, and Friday (indicated by a corresponding 1, 3, and 6, respectively). The system will automatically renew that query every Sunday, Tuesday, and

Friday of each week until the subscriber deactivates it. This feature thus negates the inconvenience of having to repeatedly enter the same queries for regularly travelled routes, such as work commutes.

5 Each query item has a corresponding menu push-button box marked "ok" which permits interactive querying. Activating this button, e.g., via mouse click, causes the GUI to immediately submit a one-time query requesting information about the route specified in that entry. The
10 entry, however, is not changed by invoking an interactive query from the GUI. The interactive query feature allows the subscriber to use a stored interest profile entry to generate a quick query for that entry. Interactive querying is also possible via a text-only interface. For
15 example, a subscriber may submit a query in the form of a simple command-line instruction which can run on any platform having e-mail access to the alert server.

As indicated by the menu screen for generating the communication profile (Fig. 7), the subscriber can select
20 among several delivery channels (e.g., pager, facsimile, voice mail, electronic mail, radio mail, home phone, work phone, cellular phone, or video), and different time intervals of the day. Thus, for example, a subscriber could direct that between 7:00 AM and 7:30 AM, the
25 information be sent via home telephone, and between 4:45 PM and 5:00 PM, information be sent to an appropriate voice mail box.

The subscriber may also request that multiple copies of the information be delivered on multiple channels
30 simultaneously. For example, from 7:30 AM to 8:00 AM, the subscriber could direct that information be sent to both a pager and by electronic mail. Further, the communication profile provides a default entry in which the subscriber

can specify a delivery channel to which information will be sent if not otherwise specified.

5 The delivery of information alerts can depart from the time periods and communications channels specified in the subscriber's communications profile if the subscriber is known to be on the system when an information alert occurs.

10 Thus, rather than send the information alert only as specified in the communications profile, the system sends the information directly to the subscriber at his on-line location. Specifically, when the subscriber accesses the system through a communications device, the device transmits dynamic registration information notifying the system of its identity and active status. Accordingly, if an information alert occurs and the subscriber is known to be on the system by virtue of dynamic registration information sent by an active communications channel, the information alert will be delivered to the subscriber via that active channel, even if that channel has not been specified in the communications profile for delivery of information at that time.

A typical information alert sent to a subscriber's pager could contain the following information:

Report Time : 1715

Summary: Accident-Traffic Jam

25 Detail: IN MORRIS COUNTY; NORTHBOUND ROUTE 287 IS JAMMED FOR OVER EIGHT (8) MILES INTO SOUTH STREET (MORRISTOWN), WHERE THE RIGHT LANE REMAINS CLOSED DUE TO A TRACTOR TRAILER ACCIDENT. NORTHBOUND ROUTE 202 IS PICKING UP LOTS OF ALTERNATE VOLUME BETWEEN BASKING RIDGE AND MORRISTOWN.

30 Because some information alerts can be lengthy, e.g., news stories or financial reports, the present invention allows the subscriber to specify that he or she should be

notified when an item matching the subscriber's profile information has been detected. This affords the subscriber the added convenience of controlling when he or she chooses to read the information alert.

5 Figure 8 shows an example of a notification menu which permits the subscriber to select the preferred communication medium or media by which notification of an information alert should be sent. For example, the subscriber has specified that he or she should be notified
10 of any information alerts occurring during the time period 6:30 AM to 7:30 AM by home telephone. From 7:30 AM to 9:00 AM, in comparison, the subscriber has directed that notification be received by pager and by cellular telephone.

15 Thus, if an information alert occurs during the time period 6:30 AM to 7:30 AM, the information alert would be delivered to the subscriber according to the communications channel specified by the user for that period. In addition, because the subscriber has elected to received
20 notification of information alerts during that period, the subscriber would receive a notification message stating, for example, "A news item about IBM has just been sent to your electronic mailbox." The subscriber could then decide to retrieve the information immediately, or at a later,
25 more convenient time.

 Therefore, as described herein, the present invention discloses a personal information delivery system capable of automatic and continuous monitoring and updating. According to a preferred embodiment of the present
30 invention, a subscriber can request information about road conditions and vehicle traffic similar to the type of information obtained from commercial radio station broadcasts. However, unlike radio traffic updates, the present invention offers personalized information tailored

to the specific interest of the subscriber (e.g. condition of roads, bridges, or tunnels on the subscriber's particular route), at a specific time needed by the subscriber (e.g., during his or her commute time), and
5 delivered via a communications medium preferred by the subscriber (e.g., car phone, fax, pager).

The applications of the present invention are potentially diverse. The invention can deliver personalized, real-time information concerning a variety of
10 different areas of interest, including sports, weather, financial markets, news, and specialty interest information. This invention could also be used in targeted advertising.

Other embodiments of the present invention will be
15 apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. For example, this invention is modularly expandable to accommodate new communications technologies not yet available on the existing communications
20 infrastructure. In addition, the profile menus allowing entry of profile information by the subscriber can also be presented to the subscriber in audio format. Thus, it is intended that the specification and examples be considered as exemplary only, with a true scope of the invention being
25 indicated by the following claims.

WHAT IS CLAIMED IS:

1. A method of providing continuously-updated, personalized information responsive to parameters defining a subscriber's request for information comprising the steps, executed by a data processor, of:
- 5 receiving said parameters from the subscriber through a computer-based graphical user interface; storing said parameters in a database; receiving real-time information from an outside
- 10 information source; comparing said information with said parameters and detecting information matches; and delivering said information matches to the subscriber.
- 15 2. The method of claim 1 further comprising the step of notifying the subscriber that an information match has been delivered to the subscriber.
3. The method of claim 1 wherein the step of receiving said parameters includes the steps of
- 20 receiving destination addresses of the subscriber; receiving specified items of interest to the subscriber and time periods for generating information matches; and
- 25 receiving specified communications channels through which said information matches should be delivered to the subscriber at various times throughout the day.
4. The method of claim 1 wherein the step of receiving said parameters includes the step of receiving
- 30 through a computer keyboard, mouse, audio communication, facsimile, or touch screen.
5. The method of claim 1 wherein the step of delivering said information matches includes the step of

transmitting the information matches over one or more communications channels specified by the subscriber.

6. The method of claim 1 wherein the step of receiving said parameters includes the step of receiving an
5 identification of one or more communications channels, and wherein the step of delivering said information matches includes the step of transmitting the information over all identified communications channels at the same time.

10 7. The method of claim 1 further including the steps of

receiving dynamic registration information from an on-line communications channel of the subscriber,
identifying said on-line communications channel, and
15 delivering the information matches to said on-line communications channel.

8. The method of claim 1 wherein said steps of receiving real-time information from an outside source, comparing said information with the subscriber's
20 parameters, detecting information matches, and delivering said information matches to the subscriber, are continuously and automatically performed.

9. The method of claim 2 wherein said step of notifying includes the steps of
25 receiving specified time periods for notifying the subscriber, and

receiving specified communications channels by which the subscriber is to be notified during said specified time periods.

30 10. The method of claim 3 further including the step of overriding the times for generating and delivering information matches specified by the subscriber in response to a command for an immediate query such that an

information match is immediately sent to the subscriber at his or her on-line location.

11. An information system for providing continuously updated personalized information to a subscriber according to parameters defining a subscriber's request for information, said system comprising:

profile manager means for receiving the parameters of the subscriber's information request through a computer-based graphical user interface;

processor means for receiving real-time information from an outside information source, and

comparing means for detecting matches between said information with said parameters; and

dissemination means for receiving real-time information matching said parameters and delivering said information matches to the subscriber over a plurality of communications channels.

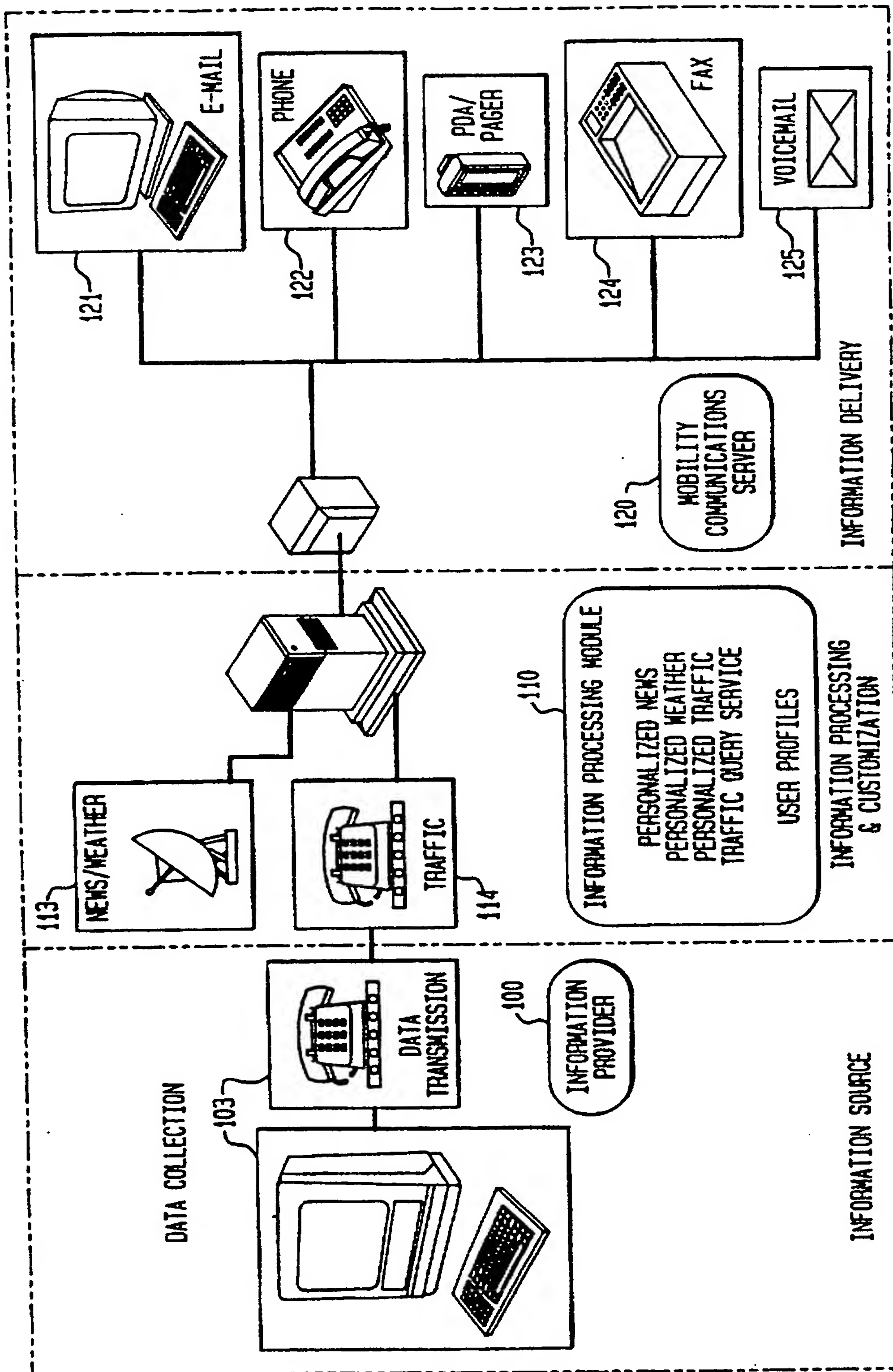
12. The information system of claim 11, further comprising a notification means for generating notification messages to the subscriber over one or more communications channels.

13. The information system of claim 11, wherein said system further includes a database for storing said parameters.

14. The information system of claim 11, wherein said profile manager means for receiving the parameters includes a computer keyboard, mouse, audio communication, facsimile, or touch screen.

15. The information system of claim 11, wherein said dissemination means includes means for converting matching information into the proper format for transmission over the communications media specified by the subscriber.

FIG. 1



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FIG. 4

MAIN MENU

| | | | | |
|---|----------------|-----------------------|------|--------|
| <input checked="" type="checkbox"/> - INTERFACE <input type="checkbox"/> | | | | |
| PERSONAL DATA | TRAVEL PROFILE | COMMUNICATION PROFILE | QUIT | README |
| <p>DEVELOPED BY: AMANDA VIRAMI, MICHAEL KRAMER AND RAVI JAIN. COPYRIGHT (c) BELLCORE 1993</p> <p>THIS PROGRAM WILL HELP YOU FILL IN YOUR PERSONAL, TRAVEL AND COMMUNICATION PROFILES IN A USER-FRIENDLY MANNER. HELP IS AVAILABLE WITHIN EACH MENU OPTION. JUST FOLLOW THESE SIMPLE STEPS:</p> <ol style="list-style-type: none"> 1. ENTER INFORMATION ABOUT YOURSELF USING THE PERSONAL DATA MENU. 2. ENTER YOUR ITINERARIES USING THE TRAVEL PROFILE MENU. 3. ENTER HOW YOU SHOULD BE INFORMED USING THE COMMUNICATION PROFILE MENU. | | | | |

FIG. 5

SAMPLE PERSONAL PROFILE MENU

| | |
|---|--|
| <input checked="" type="checkbox"/> SIMPLE PERSONAL INFO <input type="checkbox"/> | |
| SUBSCRIBER ENTRY FORM: | |
| NAME: | LAST: <u>ADAMS</u> FIRST: <u>SAM</u> |
| ADDRESS (HOME): | <u>10 DOWNING STREET, APT. 38</u> |
| | CITY: <u>BOND CITY</u> ST.: <u>NJ</u> ZIP: <u>00802</u> |
| ADDRESS (WORK): | <u>MRE 2N262 BELLCORE, 445 SOUTH STREET</u> |
| | CITY: <u>MORRISTOWN</u> ST.: <u>NJ</u> ZIP: <u>07962</u> |
| PAGER COMPANY: | <u>METROMEDIA</u> |
| PAGER ID: | <u>68813</u> |
| FAN AREA CODE & NUMBER: | <u>12819270989</u> |
| HOME AREA CODE & PHONE: | <u>19002486814</u> |
| WORK AREA CODE & PHONE: | <u>12818294183</u> |
| ONLINE AREA CODE & PHONE: | <u>19001234567</u> |
| EMAIL: | <u>ENVIRONMENT@THUMPER.BELLCORE.COM</u> |
| RADIO MAIL: | <u>SOMEBODY@RADIO-MAIL.COM</u> |
| VOICE MAIL: | MATRIX <u>1281829555</u> EXTRX <u>0000</u> |
| <input type="button" value="DONE"/> | |

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FIG. 6
SAMPLE TRAVEL PROFILE

☒ TRAVEL PROFILE ☐

| IMMED. QUERY | DATE (DD-MM-YY) | DAYS | ITINERARY |
|--|--------------------|---------|--|
| 1. <input checked="" type="checkbox"/> | 22-NOV-94 | | 06: 00-NEW JERSEY TURNPIKE-GEORGE WASHINGTON BRIDGE- HOLLAND TUNNEL-NJ_24-NJ I_78- (18: 30) |
| 2. <input checked="" type="checkbox"/> | | 1, 3, 8 | 07: 00-BELT PARKWAY-BAYONNE BRIDGE-BROOKLYN BATTERY TUNNEL-FLATBUSH AVENUE- (08: 00) |
| 3. <input checked="" type="checkbox"/> | | | |
| 4. <input checked="" type="checkbox"/> | | | |
| 5. <input checked="" type="checkbox"/> | | | |
| 6. <input checked="" type="checkbox"/> | | | |
| 7. <input checked="" type="checkbox"/> | | | |
| 8. <input checked="" type="checkbox"/> | | | |
| 9. <input checked="" type="checkbox"/> | | | |
| 10 <input checked="" type="checkbox"/> | | | |
| <input type="button" value="CANCEL"/> | | | <input type="button" value="DONE"/> |

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FIG. 7

SAMPLE COMMUNICATION PROFILE

☒ MAKE COMM. PROFILE

| TIME | | MODALITIES: | | | | | | | |
|---------|--------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| FROM: | TO: | PAGE | FAX | VMAIL | EMAIL | RMAIL | HPHONE | WPHONE | CPHONE |
| 07: 00 | 07: 30 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 07: 30 | 08: 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16: 45 | 17: 00 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| DEFAULT | ENTRY: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CANCEL

DONE

FIG. 8

☒ ☐

☒ ☐

| TIME | | NOTIFICATION MODALITIES: | | | | |
|-------|-------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| FROM: | TO: | PAGE | VMAIL | HPHONE | WPHONE | CPHONE |
| 6: 30 | 7: 30 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7: 30 | 9: 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4: 00 | 5: 00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5: 00 | 7: 00 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CANCEL

DONE

SUBSTITUTE SHEET (RULE 26)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/13797

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : Please See Extra Sheet.

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| | Please See Continuation of Second Sheet. | |

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

| | | |
|---|-----|--|
| * Special categories of cited documents: | * T | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| * A document defining the general state of the art which is not considered to be part of particular relevance | * X | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| * E earlier document published on or after the international filing date | * Y | document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| * L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | * Z | document member of the same patent family |
| * O document referring to an oral disclosure, use, exhibition or other means | | |
| * P document published prior to the international filing date but later than the priority date claimed | | |

Date of the actual completion of the international search

22 NOVEMBER 1996

Date of mailing of the international search report

31 JAN 1997

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/13797

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A,E | US 5,576,951 A (LOCKWOOD) 19 November 1996, see whole document. | 1-15 |
| X,P | US 5,513,126 A (HARKINS et al) 30 April 1996, see whole document. | 3,5-7,9,10 |
| X | US 5,428,778 A (BROOKES) 27 June 1995, see whole document. | 1,2,4,8,11-15 |
| X | US 5,404,505 A (LEVINSON) 04 April 1995, see whole document. | 1-15 |
| X | US 5,283,731 A (LALONDE et al) 01 February 1994, see whole document. | 1-15 |
| A | US 5,276,866 A (PAOLINI) 04 January 1994, see whole document. | 1-15 |
| A | US 4,740,912 A (WHITAKER) 26 April 1988, see whole document. | 1-15 |
| A | US 4,429,385 A (CICHELLI et al) 31 January 1984, see whole document. | 1-15 |

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/13797

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (6):

G06F 17/30

A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

395/602, 603, 604, 610

B. FIELDS SEARCHED
Minimum documentation searched
Classification System: U.S.

395/602, 603, 604, 610

B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):

APS (search terms: database, search, query, criteria, profile, remote, distributed)

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